

IN THE SPECIFICATION:

Please replace the paragraph beginning at Page 4, line 12 of the application Specification with the following six paragraphs.

A1 Anodization of the aluminum alloy can be in accordance with the disclosure of commonly-assigned and co-pending U.S. patent application Serial No. ~~(not yet available)~~ 10/071,869, filed February 8, 2002, titled "Halogen-Resistant Anodized Aluminum for Use in Semiconductor Processing Apparatus" (~~Docket No. AM-6846~~), which application is hereby incorporated by reference in its entirety to provide additional background information regarding the present invention.

In accordance with the disclosure in U.S. Application Serial No. 10/071,869, the alloy may be a high purity aluminum alloy having the following composition by weight %: a magnesium concentration ranging from about 3.5 % to about 4.0 %, a silicon concentration ranging from 0 % to about 0.03 %, an iron concentration ranging from 0% to about 0.03 %, a copper concentration ranging from about 0.02 % to about 0.07 %, a manganese concentration ranging from about 0.005 % to about 0.015 %, a zinc concentration ranging from about 0.08 % to about 0.16 %, a chromium concentration ranging from about 0.02 % to about 0.07%, and a titanium concentration ranging from 0% to about 0.01 %, with other single impurities not exceeding about 0.03 % each and other total impurities not exceeding about 0.1 %. In addition, the aluminum alloy may be required to meet a particular specification with respect to particulates formed from mobile impurities. For example, of the particulate agglomerations of impurity compounds, at least 95 % of all particles are advantageously less than 5 μ m in size. Five (5) % of the particles may range from 5 μ m to 20 μ m in size. Finally, no more than 0.1 % of the particles should be larger than 20 μ m, with no particles being larger than 40 μ m. For particular applications, the high purity alloy specification related to particle size and particle size distribution may be relaxed from the requirement that no more than 0.1 % of the particles are

larger than 20 μm , with no particles being larger than 40 μm , to a requirement that no more than 0.2 % of the particles are larger than 20 μm , with no particles being larger than 50 μm .

Further in accordance with the disclosure in U.S. Application Serial No. 10/071,869, prior to anodization of the aluminum alloy, it is important to chemically clean and polish the aluminum alloy surface. The cleaning is carried out by contacting the surface of the aluminum article with an acidic solution including about 60 % to 90 % technical grade phosphoric acid, having a specific gravity of about 1.7 and about 1% - 3 % by weight of nitric acid. The article temperature during cleaning is typically in the range of about 100°C, and the time period the surface of the article is in contact with the cleaning solution ranges from about 30 to about 120 seconds. This cleaning and polishing time period is often referred to as the "bright dip" time. Typically the cleaning process is followed by a deionized water rinse.

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Subsequent to cleaning, anodization of the aluminum alloy surface is carried out, to create a protective aluminum oxide film on the alloy surface. The anodization is carried out electrolytically in a water-based solution comprising 10 % to 20 % by weight sulfuric acid and about 0.5 % to 3.0 % by weight oxalic acid. The anodizing temperature is set within a range from about 5 °C to about 25 °C, and typically within a range from about 7 °C to about 21 °C. The article to be "anodized" serves as the anode, while an aluminum sheet of standard 6061 serves as the cathode. It has been discovered that it is very important that during the electrolytic oxidation process the current density, in Amps / Square Foot (ASF) in the electrolytic bath, ranges from about 5 ASF to less than 36 ASF. Further, a "barrier layer" thickness at the base of the aluminum oxide film is controlled by the operating (anodization) voltage, which typically ranges from about 15 V to about 30 V. Common practice has indicated that each 1V increase in anodization voltage increases the barrier layer thickness at the base of the film by about 14 Å.

The particular combination of process variables described above also produces an oxidized aluminum layer which is more densely packed and more uniform than previously known in the art. For example, the size of the internal pores within the hexagonal cells of the

oxidized aluminum film of the present invention range in size from about 300 Å to about 700 Å. This is compared with previously known oxidized aluminum films, where the pore size varied from about 100 Å to about 2000 Å in diameter. As a result, the density of the present oxidized film is generally higher, providing improved abrasion resistance. Depending on the application, the normal range of the anodized film thickness is between about 0.7 mils to about 2.5 mils (18 μm to 63 μm).

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The aluminum alloy substrate which includes a controlled particulate size and distribution of mobile impurities as described above prevents interference of particulate inclusions at the surface of an aluminum alloy article with the formation of a smooth transition from the alloy surface to an overlying aluminum oxide protective film, providing an improvement in the protective capabilities of the aluminum oxide film.

Please replace the paragraph beginning at Page 4, line 21 of the application Specification with the following paragraph.

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More specifically Specifically with respect to application of a Y₂O₃ coating over an anodized surface of a high purity aluminum substrate, high purity 99.95 % yttria was sprayed on coupons made from anodized high purity aluminum alloy material utilizing commercially available plasma spray coating techniques. Other techniques for applying the coating, e.g., chemical vapor deposition (CVD) and physical vapor deposition (PVD), are also appropriate.

Please replace the paragraph beginning at Page 6, line 31 of the application Specification with the following paragraph.

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First, a light mechanical finish is performed as part of the coating processes by manually holding a grinding tool over the as-coated surface, suing a silicon carbide (SiC) as the grinding medium. Fig. 2A and 2B are scanning electron micrographs that show as-coated and after finished surface ~~furnished surface~~, respectively, clearly demonstrating that, after coating, the

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surface is very rough, with many powders and nodules loosely attached to the surface. However, after finish, the coating surface is dense and free from loose particles.

